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भाग 6 रिसाव प्रकरण संचार तंत्र की अपेक्षाएं

Indian Standard

SPECIFICATION FOR ELECTRONIC EQUIPMENT/SYSTEMS FOR USE IN COAL AND METALLIFERROUS MINES

PART 6 REQUIREMENTS FOR LEAKY FEEDER COMMUNICATION SYSTEMS

UDC 622·489 : 621·395

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BUREAU OF INDIAN STANDARDS
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

June 1991

Price Group 1

Mining Electronics Sectional Committee, LTD 32

FOREWORD

This Indian Standard was adopted by the Bureau of Indian Standards, after the draft finalized by the Mining Electronics Sectional Committee had been approved by the Electronics and Telecommunication Division Council.

This standard (Part 6) is part of a series of standards on 'Specification for electronic equipment/systems for use in coal and metalliferrous mines'.

For the purpose of deciding whether a particular requirement of the standard is complied with, the final value, observed or calculated, expressing the result of a test, shall be rounded off in accordance with IS 2 : 1960 'Rules for rounding off numerical values (*revised*)'. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

Indian Standard

SPECIFICATION FOR ELECTRONIC EQUIPMENT/SYSTEMS FOR USE IN COAL AND METALLIFERROUS MINES

PART 6 REQUIREMENTS FOR LEAKY FEEDER COMMUNICATION SYSTEMS

1 SCOPE

1.1 This standard covers the requirements for leaky feeder communication systems for use in coal and metalliferrous mines.

1.2 This standard shall be read in conjunction with IS 13109 (Part 1) : 1991.

2 REFERENCE

2.1 The following Indian Standard is a necessary adjunct to this standard:

IS No.	*Title*
IS 13109 (Part 1) : 1991	Specification for electronic equipment/systems for use in coal and metalliferrous mines : Part 1 Definition, general requirements and tests

3 TERMINOLOGY

3.1 Provisions of **3** of IS 13109 (Part 1) : 1991 shall apply.

4 GENERAL REQUIREMENTS

4.1 Provisions of **5** of IS 13109 (Part 1) : 1991 shall apply. For the purpose of protection class (IP) in **5.3** of IS 13109 (Part 1) : 1991, this system shall be considered as a non-safety system.

4.2 Each leaky feeder communication system may consist of the following:

a) Base station.
b) Mobile station.
c) Radiating cable.
d) Power supply.

In addition, wherever required, the system may have line repeaters as well.

4.2.1 Base station shall consist of transmitter and receiver or transreceiver with call facility.

4.2.2 Mobile station shall consist of transmitter and receiver or transreceiver configured for mobile communication with call facility.

4.2.3 Radiating cable shall act as an antenna.

4.2.4 Specification for radiating cable:

i) Impedance — 50/75 ohms (typical)
ii) Attenuation per km — 33 dB maximum
iii) Coupling loss — less than 68 dB

5 SAFETY REQUIREMENTS

5.1 Provisions of **6** of IS 13109 (Part 1) : 1991 shall apply.

6 FUNCTIONAL REQUIREMENTS

6.1 The functional requirements shall be as follows:

a) R.F. Parameters:
  i) Frequency range — 68 MHz to 88 MHz
  ii) Mode of operation — Simplex/Duplex
  iii) Modulation system — FM
b) Audio Parameters:
  i) Received speech frequency response : Within 0 and −8·7 dB over a frequency range of 300 Hz and 3·4 kHz or better, measured with respect to 800 Hz.
  ii) Range : Minimum 2 km.
  iii) Maximum allowable distortion : 5 percent.
  iv) Cross talk : i) Between 2 circuits— 58 dB.
    ii) Between go and return direction of a circuit — 43 dB.
  v) Power supply : Provisions of **5.7** of IS 13109 (Part 1) : 1991 shall apply.

6.2 Any additional requirements may also be specified as agreed between the purchaser and the manufacturer.

7 MARKING

7.1 Provisions of **8** of IS 13109 (Part 1) : 1991 shall apply.

7.2 The type of cable to be used with the equipment shall also be marked. The cable distributed parameters shall be supplied by the manufacturer.

8 ENVIRONMENTAL REQUIREMENTS

8.1 Provisions of **9** of IS 13109 (Part 1) : 1991 shall apply.

8.2 Endurance Test

The sample shall be subjected to endurance test consisting of 11 hours of operation and 1 hour rest period for a total operating period of 1 000 hours under laboratory atmospheric conditions and at rated voltage with transmit to receive ratio of 1 : 9. Recovery period shall be one hour.

8.2.1 All mating parts, which are required to be engaged/disengaged for normal operation of the equipment/systems, shall be engaged/disengaged 500 times under deenergised condition at the rate of 6 to 10 operations per minute. There shall not be any mechanical damage after this test.

9 GENERAL CONDITIONS FOR MEASUREMENTS

9.1 Provisions of **11** of IS 13109 (Part 1) : 1991 shall apply.

10 TESTS

10.1 Classification of Tests

10.1.1 *Type Tests*

10.1.1.1 Provisions of **10.1.1** of IS 13109 (Part 1) : 1991 shall apply.

10.1.1.2 After each type test, the sample shall be subjected to functional requirements as specified in **6** of this standard.

10.1.2 *Routine Test*

The following shall constitute routine tests:

a) Visual examination.
b) Received speech frequency response.
c) Range.
d) Maximum allowable distortion.
e) Cross talk.
f) Power supply.

10.1.3 *Acceptance Tests*

10.1.3.1 Provisions of **10.1.3** of IS 13109 (Part 1) : 1991 shall apply.

10.1.3.2 The following tests shall constitute the acceptance tests:

a) Visual examination.
b) Received speech frequency response.
c) Range.
d) Maximum allowable distortion.
e) Cross talk.
f) Power supply check.
g) Protection against ingress of solid foreign bodies and liquid particles.

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